Strip Hit Correction

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CEPC Silicon Micro Strip Detector

, Measurement direction Wafer | Wafer 2

In the current CEPC design, two single sided silicon strips are stacked on top of each other to give two dimensional measurements.

One dimensional resolution: $\sigma=7\mu m$. Distance between two layers: 0.2mm.

Strip Detector Space Point Reconstruction (Current Version)



- 1. Find activated strips using sim hit.
- 2. Assume track is a straight line coming from IP that traverses both activated stripes.
- 3. The space point is where the track intersects with the activated strip in the first layer.

Problem: The reconstructed space point is dependent on the incident track angle, therefore the assumption causes systematic error.

Strip Hit Correction

Solution: 1 step iteration.

- 1. Use the flawed space point builder and run through track reconstruction.
- StripHitCorrection processor selects strip space points from reconstructed tracks. And the track information to work out the incident angle and rebuild space points.
- 3. Rerun track reconstruction.

Footnote:

- 1. Strip space points that are not used in the final MarlinTrk are discarded by StripHitCorrection processor.
- 2. Only works for SIT and SET
- 3. Need to use my own version of SpacePointBuilder.

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SET Hit Reconstruction Errors in x and z Direction (3GeV muon)





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